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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 17

Application Number: 09/096,395
Filing Date: June 11, 1998
Appellant(s): TOYOFUKU ET AL.

Max Moskowitz
For Appellant

EXAMINER'S ANSWER

(1) *Real Party in Interest*

This is in response to the appeal brief filed March 24, 2003.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

The amendment after final rejection filed on December 11, 2002 has been entered.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

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(7) Grouping of Claims

Appellant's brief includes a statement that claims 13-18, 20, and 22-28 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

6,195,125	Udagawa et al.	02-2001
5,907,353	Okauchi	05-1999
5,027,214	Fujimori	06-1991
5,682,197	Moghadam et al.	10-1997

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori (U.S. Patent No. 5,027,214) in view of Okauchi (U.S. Patent No. 5,907,353).

Fujimori discloses an electronic still camera that uses a variable data compression scheme for storing image signals. The camera includes a detachable memory card (17) used to store images taken by the camera, a frame count detecting section (25) for detecting the amount of

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frames recorded in the memory (18) of the memory card (17), a remaining capacity calculating/determining section (24) for determining the amount of available space left in the memory card upon insertion (col. 7, lines 34-37), a system controller (2) for estimating the number of images which can be recorded in the memory (18) (col. 7, lines 5-7), and a warning means for letting the user know that the amount of memory remaining may not be sufficient for recording the image or images (col. 7, lines 11-21). Fujimori also discloses a comparison step wherein the total amount of data from the images taken (MAX) is compared to the remaining memory (REM) to see if the images will fit onto the memory card (18) (col. 8, lines 34-57). In column 8, lines 50-57, Fujimori also discloses that a number (N) is displayed that represents the remaining number of images capable of being taken. Also disclosed is a displayed warning telling the user that the next image cannot be recorded on the memory and that the user should insert a new memory card to continue taking pictures (col. 9, lines 34-49).

Fujimori, however, does not disclose a predicted number setting means for setting the number of images predicted to be taken. Okauchi, on the other hand discloses a system for producing high-resolution images which sets the number of images to be taken according to the size of the object. Based upon the focus setting and the size of the object the system sets a number of images to be taken. Therefore, the system is predicting how many images will be taken based on the size and focal length. These images are then synthesized to form one complete, high-resolution image thereby forming a panoramic image. See col. 6, lines 6-34. Furthermore, the system can operate to divide the image into more or less than the four images discussed in col. 6, lines 6-34 and can even be arbitrarily set (col. 7, lines 39-52). Therefore, Okauchi discloses a panoramic camera that allows a user to preset the number of images.

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Fujimori discloses the ability to determine the number of available frames left in a camera's memory. Since the number of images to be taken is derived in Okauchi, it would have been obvious to compare the number of images preset and compare it to the number of images remaining in the memory and to generate a warning according to the comparison as discussed in Fujimori. Although, Fujimori does not disclose a panoramic camera, it would have been obvious, based upon the teaching of Fujimori to compare the number of images in a panoramic image set with the number of frames left in the memory of a camera so that a panoramic imaging operation can be successfully carried out. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to predict the number of images to be taken as in Okauchi and compare that number with the number of images remaining on the memory card as in Fujimori to accommodate the user when taking pictures so the user knows when the memory is full and to insert a new memory card if the memory card is indeed full. This will aid the photographer so that any size of panoramic image can be taken and that the photographer does not have to take memory capacity into consideration when taking pictures.

Claims 15-17 and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori (U.S. Patent No. 5,027,214) in view of Moghadam et al. (5,682,197).

Regarding *claim 15*, Fujimori discloses an electronic still camera for taking a multitude of images that uses a variable data compression scheme for storing the image signals. The camera includes a detachable memory card (17) used to store images taken by the camera, a frame count detecting section (25) for detecting the amount of frames recorded in the memory (18) of the memory card (17), a remaining capacity calculating/determining section (24) for

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determining the amount of available space left in the memory card upon insertion (col. 7, lines 34-37), a system controller (2) for estimating the number of images which can be recorded in the memory (18) (col. 7, lines 5-7), and a warning means for letting the user know that the amount of memory remaining may not be sufficient for recording the image or images (col. 7, lines 11-21). Fujimori also discloses a comparison step wherein the total amount of data from the images taken (MAX) is compared to the remaining memory (REM) to see if the images will fit onto the memory card (18) (col. 8, lines 34-57). In column 8, lines 50-57, Fujimori also discloses that a number (N) is displayed that represents the remaining number of images capable of being taken. Also disclosed is a displayed warning telling the user that the next image cannot be recorded on the memory and that the user should insert a new memory card to continue taking pictures (col. 9, lines 34-49). Therefore, when the remaining capacity (REM) of the memory card is insufficient to record another image, the number of frames remaining (N) would be zero thus necessitating the need for the warning and a new memory card.

Fujimori, however, fails to disclose a panoramic camera system. Moghadam, on the other hand discloses a camera capable of operating in a normal photographing mode or a panoramic photographing mode. The camera includes the use of a memory card (70) for saving the image information. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a panoramic mode in the camera of Fujimori in order to give the user more options when taking pictures thereby utilizing the method for determining the remaining capacity of a memory card as disclosed in Fujimori, in order to utilize the efficient use of the memory card.

As for *claim 16*, as mentioned previously, Fujimori discloses an operation wherein if the remaining capacity (REM) is deemed to be too small to store an additional image a warning is generated. Fujimori also discloses calculating a number (N) which represents the number of additional images capable of being photographed (col. 8, line 50). Furthermore, when the memory card is full a warning is displayed informing the user to insert another memory card (col. 9, lines 34-49). Therefore, when the number N is equal to zero a warning will be generated telling the user to insert a new memory card.

With regards to *claim 17*, Fujimori discloses displaying a warning when the memory card has reached its full capacity informing the photographer to insert a new memory card to continue taking images (col. 9, lines 34-49).

With regards to *claim 25*, Fujimori discloses an electronic still camera for taking a multitude of images that uses a variable data compression scheme for storing the image signals. The camera includes a detachable memory card (17) used to store images taken by the camera, a frame count detecting section (25) for detecting the amount of frames recorded in the memory (18) of the memory card (17), a remaining capacity calculating/determining section (24) for determining the amount of available space left in the memory card upon insertion (col. 7, lines 34-37), a system controller (2) for estimating the number of images which can be recorded in the memory (18) (col. 7, lines 5-7), and a warning means for letting the user know that the amount of memory remaining may not be sufficient for recording the image or images (col. 7, lines 11-21). Fujimori also discloses a comparison step wherein the total amount of data from the images taken (MAX) is compared to the remaining memory (REM) to see if the images will fit onto the memory card (18) (col. 8, lines 34-57). In column 8, lines 50-57, Fujimori also discloses that a

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number (N) is displayed that represents the remaining number of images capable of being taken. Also disclosed is a displayed warning telling the user that the next image cannot be recorded on the memory and that the user should insert a new memory card to continue taking pictures (col. 9, lines 34-49). Therefore, when the remaining capacity (REM) of the memory card is insufficient to record another image, the number of frames remaining (N) would be zero thus necessitating the need for the warning and a new memory card.

Fujimori, however, fails to disclose a panoramic camera or identification data representing the set of panoramic images. Moghadam, on the other hand, discloses a panoramic camera (10) capable of operating in a normal photographing mode or a panoramic photographing mode. The camera includes the use of a memory card (70) for saving the image information. Moghadam also discloses including identification information with the panoramic images which represents the number sequence of each image (col. 4, lines 47-51). The identification information allows for easier processing and better identification. Therefore, it would have been obvious to use the memory card capacity system of Fujimori with a panoramic camera which saves images on a memory card in order to allow the photographer to take any number of images in a panoramic scene so as not to limit the photographer to the memory contained in one memory card and additionally, to identify each of the image with an identifier for more coherent processing.

Claim 26 includes the further limitation upon claim 25 wherein the identification information is one of a file name shared by all images or a panorama number representing a photographing order. Moghadam discloses that when the camera is in the panoramic mode that the control processor (32) inserts the number and order of each image in the sequence in the

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header (52). See column 4, lines 1-10. It would have been obvious to continue this process of tagging images in a sequence on the second recording medium so that processing of the entire panoramic image could be carried out.

Regarding *claim 27*, Fujimori discloses an electronic still camera for taking a multitude of images that uses a variable data compression scheme for storing the image signals. The camera includes a detachable memory card (17) used to store images taken by the camera, a frame count detecting section (25) for detecting the amount of frames recorded in the memory (18) of the memory card (17), a remaining capacity calculating/determining section (24) for determining the amount of available space left in the memory card upon insertion (col. 7, lines 34-37), a system controller (2) for estimating the number of images which can be recorded in the memory (18) (col. 7, lines 5-7), and a warning means for letting the user know that the amount of memory remaining may not be sufficient for recording the image or images (col. 7, lines 11-21). Fujimori also discloses a comparison step wherein the total amount of data from the images taken (MAX) is compared to the remaining memory (REM) to see if the images will fit onto the memory card (18) (col. 8, lines 34-57). In column 8, lines 50-57, Fujimori also discloses that a number (N) is displayed that represents the remaining number of images capable of being taken. Also disclosed is a displayed warning telling the user that the next image cannot be recorded on the memory and that the user should insert a new memory card to continue taking pictures (col. 9, lines 34-49). Therefore, when the remaining capacity (REM) of the memory card is insufficient to record another image, the number of frames remaining (N) would be zero thus necessitating the need for the warning and a new memory card.

Fujimori, however, fails to disclose a panoramic camera or identification data representing the set of panoramic images. Moghadam, on the other hand, discloses a panoramic camera (10) capable of operating in a normal photographing mode or a panoramic photographing mode. The camera includes the use of a memory card (70) for saving the image information. Moghadam also discloses including identification information with the panoramic images which represents the number sequence of each image (col. 4, lines 47-51). The identification information allows for easier processing and better identification. Therefore, it would have been obvious to use the memory card capacity system of Fujimori with a panoramic camera which saves images on a memory card in order to allow the photographer to take any number of images in a panoramic scene so as not to limit the photographer to the memory contained in one memory card and additionally, to identify each of the image with an identifier for more coherent processing.

Claim 28 includes the further limitation upon claim 27 wherein the identification information is one of a file name shared by all images or a panorama number representing a photographing order. Moghadam discloses that when the camera is in the panoramic mode that the control processor (32) inserts the number and order of each image in the sequence in the header (52). See column 4, lines 1-10. It would have been obvious to continue this process of tagging images in a sequence on the second recording medium so that processing of the entire panoramic image could be carried out.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori (U.S. Patent No. 5,027,214) in view of Moghadam et al. (5,682,197) and further in view of Udagawa et al. (U.S. Patent No. 6,195,125).

Regarding *claim 18*, Fujimori discloses an electronic still camera for taking a multitude of images that uses a variable data compression scheme for storing the image signals. The camera includes a detachable memory card (17) used to store images taken by the camera, a frame count detecting section (25) for detecting the amount of frames recorded in the memory (18) of the memory card (17), a remaining capacity calculating/determining section (24) for determining the amount of available space left in the memory card upon insertion (col. 7, lines 34-37), a system controller (2) for estimating the number of images which can be recorded in the memory (18) (col. 7, lines 5-7), and a warning means for letting the user know that the amount of memory remaining may not be sufficient for recording the image or images (col. 7, lines 11-21). Fujimori also discloses a comparison step wherein the total amount of data from the images taken (MAX) is compared to the remaining memory (REM) to see if the images will fit onto the memory card (18) (col. 8, lines 34-57). In column 8, lines 50-57, Fujimori also discloses that a number (N) is displayed that represents the remaining number of images capable of being taken. Also disclosed is a displayed warning telling the user that the next image cannot be recorded on the memory and that the user should insert a new memory card to continue taking pictures (col. 9, lines 34-49). Therefore, when the remaining capacity (REM) of the memory card is insufficient to record another image, the number of frames remaining (N) would be zero thus necessitating the need for the warning and a new memory card.

Fujimori, however, fails to disclose a panoramic camera which includes a photographing information storage element to store photographing conditions and a control element for taking subsequent images according to the stored photographing conditions. Moghadam, on the other hand discloses a camera capable of operating in a normal photographing mode or a panoramic photographing mode. The camera includes the use of a memory card (70) for saving the image information. The camera system also includes saving photographing information along with the image and using the photographing image in subsequent images. More specifically, Moghadam discloses the use of indicia (22 and 24) for aligning images. The indicia serve as photographing information by saving the address in the indicia address memory (60) (col. 4, lines 15-22) of the indicia thereby showing where the camera was aligned in the previous images. Moghadam discloses combining a plurality of images to form a panoramic image. The data generated by the images of Moghadam is inherently stored in some way. Since Moghadam discloses storing a plurality of images it would have been obvious to manage the data of Moghadam by detecting the amount of storage left in the memory. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Fujimori and Moghadam to develop a panoramic camera capable of efficient memory management allowing the user to continually take images with several memory cards so that all of the images that a user would like to take can be imaged.

Additionally, neither Fujimori nor Moghadam disclose that the photographing conditions include at least one of exposure information, AF information and white balance information. Udagawa, however, discloses an electronic camera used for combining images to form a higher definition image that takes a series of photographs under the same photographing conditions.

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Column 13, line 60 to column 14, line 26 disclose that a series of images are taken under the same focus, exposure, and white balance as the first image sensed. Furthermore, Udagawa discloses that the information is saved since an electrical shutter speed is used. Inherently, the shutter speed (charge accumulation time) would have to be stored somewhere in order for it to be recalled and referenced again for use in subsequent images. Udagawa teaches that by taking subsequent images under the same conditions as the first, the plurality of images is easier to combine and slows battery consumption (col. 14, lines 24-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to take panoramic images under the same conditions as the other images in order to avoid additional processing and to slow battery consumption.

Claims 20 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moghadam et al. (U.S. Patent No. 5,682,197) in view of Udagawa et al. (U.S. Patent No. 6,195,125).

Regarding *claim 20*, Moghadam discloses a camera capable of operating in a normal photographing mode or a panoramic photographing mode. The camera includes the use of a memory card (70) for saving the image information. The camera system also includes saving photographing information along with the image and using the photographing image in subsequent images. More specifically, Moghadam discloses the use of indicia (22 and 24) for aligning images. The indicia serve as photographing information by saving the address in the indicia address memory (60) (col. 4, lines 15-22) of the indicia thereby showing where the

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camera was aligned in the previous images. This is used to compose subsequent images by saving the address of the indicia and using the indicia to photograph the next image

Moghadam, however, fails to disclose that the photographing conditions include one of photometric information, white balance information, a focusing setting, exposure information, and a rotation direction. Udagawa, on the other hand, discloses an electronic camera used for combining images to form a higher definition image that takes a series of photographs under the same photographing conditions. Column 13, line 60 to column 14, line 26 disclose that a series of images are taken under the same focus, exposure, and white balance as the first image sensed. Furthermore, Udagawa discloses that the information is saved since an electrical shutter speed is used. Inherently, the shutter speed (charge accumulation time) would have to be stored somewhere in order for it to be recalled and referenced again for use in subsequent images. Udagawa teaches that by taking subsequent images under the same conditions as the first, the plurality of images is easier to combine and slows battery consumption (col. 14, lines 24-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to take panoramic images under the same conditions as the other images in order to avoid additional processing and to slow battery consumption.

Regarding *claim 12*, Udagawa discloses in column 13, line 60 to column 14, line 26 disclose that a series of images are taken under the same focus, exposure, and white balance as the first image sensed. Udagawa teaches that by taking subsequent images under the same conditions as the first, the plurality of images is easier to combine and slows battery consumption (col. 14, lines 24-26).

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moghadam et al. (U.S. Patent No. 5,682,197) in view of Udagawa et al. (U.S. Patent No. 6,195,125) and further in view of Fujimori (U.S. Patent No. 5,027,214).

Regarding *claim 22*, which applicant has amended into independent form to incorporate the limitations of claim 20, as mentioned above in the discussion of claim 20, both Moghadam and Udagawa disclose all of the limitations as related to claim 20. However neither of the aforementioned references discloses all the limitations of claim 22. Fujimori, on the other hand, discloses an electronic still camera that uses a variable data compression scheme for storing image signals. The camera includes a detachable memory card (17) used to store images taken by the camera, a frame count detecting section (25) for detecting the amount of frames recorded in the memory (18) of the memory card (17), a remaining capacity calculating/determining section (24) for determining the amount of available space left in the memory card upon insertion (col. 7, lines 34-37), a system controller (2) for estimating the number of images which can be recorded in the memory (18) (col. 7, lines 5-7), and a warning means for letting the user know that the amount of memory remaining may not be sufficient for recording the image or images (col. 7, lines 11-21). Fujimori also discloses a comparison step wherein the total amount of data from the images taken (MAX) is compared to the remaining memory (REM) to see if the images will fit onto the memory card (18) (col. 8, lines 34-57). In column 8, lines 50-57, Fujimori also discloses that a number (N) is displayed that represents the remaining number of images capable of being taken. Also disclosed is a displayed warning telling the user that the next image cannot be recorded on the memory and that the user should insert a new memory card to continue taking pictures (col. 9, lines 34-49). It would have been obvious to one of ordinary

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skill in the art at the time the invention was made to include a memory capacity warning indicator in the camera of Moghadam so the user is informed about how many remaining images the memory card can hold.

Claims 13 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moghadam et al. (U.S. Patent No. 5,682,197) in view of Udagawa et al. (U.S. Patent No. 6,195,125) and further in view of Fujimori (U.S. Patent No. 5,027,214) and Okauchi (U.S. Patent No. 5,907,353).

Regarding *claim 23*, as mentioned above in the discussion of claim 22, Moghadam, Udagawa, and Fujimori disclose all of the limitations of the parent claim. However, none of the aforementioned references discloses the limitations of claim 23. Okauchi, on the other hand discloses a system for producing high-resolution images which sets the number of images to be taken according to the size of the object. Based upon the focus setting and the size of the object the system sets a number of images to be taken. Therefore, the system is predicting how many images will be taken based on the size and focal length. These images are then synthesized to form one complete, high-resolution image thereby forming a panoramic image. See col. 6, lines 6-34. Furthermore, the system can operate to divide the image into more or less than the four images discussed in col. 6, lines 6-34 and can even be arbitrarily set (col. 7, lines 39-52). Since the number of images to be taken is derived in Okauchi, it would have been obvious to compare the number of images derived and compare it to the number of images remaining in the memory and to generate a warning according to the comparison as discussed in Fujimori. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to predict

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the number of images to be taken as in Okauchi and compare that number with the number of images remaining on the memory card as in Fujimori to accommodate the user when taking pictures so the user knows when the memory is full and to insert a new memory card if the memory card is indeed full. This will aid the photographer so that any size of panoramic image can be taken and that the photographer does not have to take memory capacity into consideration when taking pictures.

Claim 24 includes the added limitation upon claim 23 wherein the apparatus further includes means for checking whether the second recording medium has been interchanged for the first recording medium. Fujimori discloses once the capacity of the memory card (17) has been reached, photographing operations are inhibited and the system waits for a second memory card to replace the first. See column 9, lines 43-46. This implies that there is a means for checking whether or not a new memory card has been inserted.

Claim 13 includes the added limitation upon claim 23 wherein the identification information is one of a file name shared by all images or a panorama number representing a photographing order. Moghadam discloses that when the camera is in the panoramic mode that the control processor (32) inserts the number and order of each image in the sequence in the header (52). See column 4, lines 1-10. It would have been obvious to continue this process of tagging images in a sequence on the second recording medium so that processing of the entire panoramic image could be carried out.

(11) Response to Argument

With regard to the Fujimori reference, appellant argues that the reference fails to teach a panoramic camera or issuing a warning when the camera does not have sufficient memory to record a given number of pictures that correspond to a set of panoramic pictures. Although it is admitted that the Fujimori reference fails to disclose the use of a panoramic camera, it does disclose the ability to determine how many images can be stored on the recording medium given a remaining capacity. See column 8, lines 43-57. This count number is displayed to the user so that the “user can make a plan for subsequent photographing”. Fujimori also discloses that a warning may be generated by an alarm (col. 7, lines 15-22) for warning a user when an image cannot be stored in the memory card. Also, Fujimori discloses displaying the number of remaining images that can be stored on the memory card. This displaying of the number of remaining images can be interpreted to be a warning operation. Okauchi discloses the ability to determine or preset the number of images in a panoramic image set. It would have been obvious to one of ordinary skill in the art to compare the number of remaining images in a recording medium as shown in Fujimori with the preset number of images in a panoramic image set so that a user is warned when there is not enough memory to complete a panoramic imaging operation. A user would not want a panoramic imaging operation to begin if there is not sufficient memory to store all of the images of the image set.

Additionally, in a brief side note on page 7, lines 13-14, appellant states that neither Fujimori nor Okauchi discloses a panoramic camera. However, it is submitted that Okauchi does disclose a panoramic camera since it takes a plurality of images of adjacent scenes and combines them to form one large image. See Figure 3.

Appellant also argues that Moghadam merely discloses a panoramic camera and cannot be combined with Fujimori in order to arrive at the claimed invention. However, as mentioned above, Fujimori does disclose determining the number of remaining image frames that can be stored in the memory and generating a warning if an image cannot be stored in a memory. Moghadam discloses taking a plurality of images, storing them on a memory card, and eventually combining them to form one complete panoramic image. If all of the images of a panoramic image set will not fit on a recording medium, it would have been obvious to generate a warning as in Fujimori, if the memory cannot hold the plurality of panoramic images being taken in Moghadam.

With regard to the Udagawa reference, appellant argues that the reference fails to disclose a panoramic camera. However, both Moghadam and Okauchi disclose panoramic cameras. Udagawa is used to show that images of a scene can be imaged under the same photographing conditions. Although it is used to form a high-resolution image it is obvious to use a similar technique in a panoramic camera since the principle being relied upon is basically the same. A panoramic camera is used to take plural images of a subject over a relatively short time period under almost identical external photographing conditions. The imager of Udagawa is used to take a plurality of images over a short time period under the same photographing conditions. Therefore, it would have been obvious to one of ordinary skill in the art to use the concept of taking images under the same photographing conditions as in Udagawa, in a panoramic camera, thus avoiding the sometimes lengthy processing and to conserve battery power.

For the above reasons, it is believed that the rejections should be sustained.

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Respectfully submitted,

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April 8, 2003


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